

Technical Report 889

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Delayed Entry Program (DEP) Attrition: A Microdata Model

Abraham Nelson and Cyril E. Kearl
U.S. Army Research Institute

May 1990

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United States Army Research Institute
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Technical Report 889

**Delayed Entry Program (DEP) Attrition:
A Microdata Model**

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FOREWORD

The Manpower and Personnel Policy Research Group of the U.S. Army Research Institute (ARI) performs research in the economics of manpower and personnel issues of particular significance to the U.S. Army. This research identifies factors that affect attrition from the Delayed Entry Program (DEP), building on previous efforts and correcting their shortcomings.

This report was prepared as part of the program task in recruiting and retention of the Manpower and Personnel Research Laboratory. The research reported was conducted at the request of Program, Analysis, and Evaluation Directorate of the United States Army Recruiting Command. The results of this research were provided to the Commander of the U.S. Army Recruiting Command (on 7 December 1989). The Army can use these findings to identify individuals most likely to become DEP losses and to estimate the impact of changing economic conditions on DEP losses.


EDGAR M. JOHNSON
Technical Director

DELAYED ENTRY PROGRAM (DEP) ATTRITION: A MICRODATA MODEL

EXECUTIVE SUMMARY

Requirement:

The U.S. Army Research Institute conducts research on manpower and personnel issues of significance and interest to the U.S. Army. The Delayed Entry Program (DEP) is a valuable management tool used by the U.S. Army Recruiting Command (USAREC) and the other U.S. military recruiting organizations. Attrition from the DEP reduces the effectiveness and efficiency of this program. Identifying factors that influence DEP attrition is an important issue for Army recruiting policymakers.

Procedure:

DEP attrition behavior is analyzed using microdata on individuals who signed enlistment contracts during FY86 and FY87. Regional unemployment rates and military/regional-civilian-wage ratios at the time individuals signed the enlistment contract are also considered. We examine personal characteristics (age, gender, race, dependent status, high school status, and Armed Forces Qualification Test (AFQT) score), recruiting tools (DEP length, Army College Fund (ACF), enlistment bonus, and term of enlistment), and economic factors (unemployment rate and relative wages) to determine their impact on the probability of DEP loss. Unexplained variations in DEP loss between FY86 and FY87 are also examined. Binary logistic regression is used to obtain estimates of the effects of these factors on the probability of DEP loss for the full sample and certain subgroups.

Findings:

The findings of this research indicate that economic factors strongly influence DEP loss. As the economy becomes stronger, DEP loss increases. The findings also suggest that enlistment incentives and increased Army job training result in small, but significant, reductions in the probability of DEP loss.

The length of the DEP, which is a recruiting policy tool, has a significant effect on DEP loss. Longer DEP lengths increase the likelihood a recruit will be a DEP loss.

The largest influences on DEP loss are related to personal characteristics: age, gender, race, dependent status, high school status. Being young, male, black, having

dependents, and having a high school diploma reduce the likelihood a recruit will be a DEP loss. There is a particularly strong relationship between age and DEP loss for seniors. If high school seniors are older than their classmates, they are far more likely to be DEP losses.

Utilization of Findings:

The results of this research can be used in the management of the DEP. The analyses suggest that selective adjustments in DEP policies may reduce losses from the program.

DELAYED ENTRY PROGRAM (DEP) ATTRITION: A MICRODATA MODEL

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DELAYED ENTRY PROGRAM (DEP) ATTRITION: A MICRODATA MODEL

OVERVIEW

The Delayed Entry Program (DEP) is an important personnel management tool used by the recruiting organizations of the U.S. military services. This program allows individuals to delay reporting for active duty up to twelve months after signing an enlistment contract¹. Nearly every recruit spends some time in the DEP prior to accession. Since 1986 there has been increasing attrition from this program (DEP loss), which has added to recruiting difficulties because replacements must be found or training slots go empty. There are a variety of possible explanations for this increase: an improving economy, reduced enlistment incentives, a change in the composition of the recruited cohort, and changes in attitudes toward the military.

Although previous research has attempted to identify causes of DEP loss, these efforts suffer from small sample sizes, systematic sample bias, and omission of economic variables that are likely to be related to DEP loss. Our research builds upon this previous work. After correcting for these shortcomings, we find that economic factors strongly influence DEP loss. As the economy becomes stronger, DEP loss increases. As alternative employment opportunities become more attractive, not only are recruits harder to attract, they are also harder to keep. We also find that most enlistment benefits and increased Army job training result in small but significant reductions in DEP loss, enhancing their purpose and cost effectiveness. The largest influences on DEP loss, however, are related to personal characteristics: age, gender, race, dependent status, and high school status and the length of time in the DEP.

Finally, there are significant differences in the influence of the explanatory variables across subgroups. These reflect differences in enlistment motivations and job search opportunities. They also may indicate that selective adjustments in DEP policies will be most effective in minimizing DEP loss.

The next section provides background on the DEP and its relationship to recruiting and an intuitive explanation for DEP loss. Section three describes the data and outlines the methodology used to estimate DEP loss. The fourth section reports the results, while the fifth section discusses policy implications.

THE DELAYED ENTRY PROGRAM

Background

The flexibility provided by the DEP permits the military services to smooth the flow of recruits into the training base despite seasonal fluctuations in recruiting. DEP acts in much the same way as sales inventories, permitting smooth production flows despite fluctuating product demand. Recruiters are able to reduce costs by

¹Under some circumstances, it is possible to obtain an extension of the length of DEP beyond twelve months.

concentrating their enlistment efforts on those individuals most likely to join the Army, even though these enlistments may take place at a future date. The DEP is an anticyclical recruiting tool permitting the Army to increase the number of enlistees enrolled in the DEP during favorable recruiting times and drawing it down during times when recruiting is more difficult.

Besides permitting a steady use of training facilities, the DEP has other positive aspects. Morey (1983) has postulated that individuals in the DEP provide referrals from their peers and thereby increase recruiter productivity. Manganaris and Phillips (1985) have found that the probability of attrition from active duty is inversely related to the length of time spent in DEP. Attrition, during or immediately after training, is particularly costly since it results in both higher training and recruiting costs.

Managing the DEP is costly. Recruiters must expend time and effort maintaining contact with those enrolled in the program. Most DEP costs, however, are due to lost recruiting and training productivity that occurs when recruits decide, after signing an enlistment contract, not to enter the Army². Additional enlistment contracts must be obtained to compensate for DEP losses. This requires the expenditure of additional resources, including recruiter time. DEP losses also adversely impact the Army's ability to fill training seats. Training slots go empty when DEP losses cannot be replaced, increasing training costs.

To minimize DEP loss and the costs associated with it, recruiters are expected to maintain contact with enlistees while in the DEP, to identify potential losses, and to assist enlistees (where possible) with problems that might cause them not to enter active duty.

The U.S. Army Recruiting Command (USAREC) attempts to limit losses by identifying characteristics that are associated with high DEP loss and restricting the length of the DEP for these individuals. These restrictions are based, primarily, on educational attainment and score on the Armed Forces Qualification Test (AFQT). High school graduate and senior males scoring above the fiftieth percentile on the AFQT are permitted the longest time in the DEP. Non-high school graduates are restricted to the shortest DEP lengths. These restrictions, however, can change depending on the manpower requirements of the Army and upon the recruiting environment.

Factors Affecting DEP Loss

The senior year of high school and the four years following represent a crossroads in the lives of most youth. Prior to this point, they have not had to choose between alternative career paths since high school is a prerequisite for most careers. After high school, career paths diverge with some youth choosing college, or additional vocational

²Although enlistment contracts are binding legal documents, they are not enforced by the Army, so enlistees in the Delayed Entry Program may freely withdraw.

training, while others elect to enter the workplace. As job information becomes available and alternative career paths are evaluated, post high school plans are made, reevaluated, and changed more frequently than at any other time during the working lifetime. (For a more detailed discussion of job search with imperfect information see Lippman and McCall (1975).)

Attrition from Army service is a part of this process. Antel, Hosek, and Peterson's (1987) characterization of active duty attrition as "decision reversal" also describes some aspects of DEP loss. Much DEP loss occurs for reasons that apply to any job: unanticipated accidents resulting in injury, changes in family circumstances which make enlistment disadvantageous, receipt of an alternative career opportunity, or even learning unfavorable information about military life and Army jobs. DEP loss may also be initiated by the Army when additional information (usually medical or moral) is received indicating the unsuitability of a particular recruit.

There are, however, important differences between DEP loss and job quitting (including military attrition). Active duty in the Army imparts first hand information about job training and conditions of employment -- important causes of attrition early in a career. On the other hand, active duty limits information and time, making search for alternative employment offers costly. By contrast, time in the DEP permits active search for alternative job offers³ while adding little first hand information about Army life or training. Consequently, DEP loss is more likely to be related to factors that facilitate job search than to factors that lead to job quitting. For those actively searching for alternative opportunities, a longer DEP length means a greater opportunity of receiving more desirable alternative offers. It is not surprising, therefore, that a positive relationship between DEP length and the probability of DEP loss has been found in both previous research and our current results.

An important aspect of job search is that it provides information about career opportunities. New entrants to the career market with limited information are more likely to be influenced by additional information and to change their career decisions more frequently as a consequence. As individuals gain more information about the job market, additional information should have less effect on these decisions. Survey data compiled by Orvis and Gahart (1987) indicate that high school seniors have less information about military pay and incentives than high school graduates. By implication, higher DEP loss rates are to be expected for seniors. It might also be expected that older workers have more search experience and would therefore experience lower DEP loss rates.

Differences in enlistment motivations, however, offset differentials in market information. A strong preference for Army service is likely to be reflected in early enlistment. To the extent that early enlistments reflect tastes for Army careers, seniors would be expected to have a lower probability of DEP loss than graduates. Similarly,

³Acceptances to colleges and other training programs should be included in this category.

those enlisting early in their senior year (with long DEP lengths) might be expected to have the strongest preferences for Army service and even lower probabilities of DEP loss than those enlisting later in their senior year. On the other hand, older graduates can be expected to have a lower attachment to Army service and greater probability of DEP loss because they chose not to enlist at an earlier date. As a result of these offsetting effects, no *a priori* hypothesis is made about the probability of DEP loss for high school seniors or older enlistees.

Economic factors affect both career satisfaction and successful job search. Where labor markets are tight and civilian earnings are high relative to military pay, job search will lead to better civilian job offers. Consequently we expect unemployment rates to be negatively related to the probability of DEP loss. We also expect the military/civilian wage ratios to be negatively correlated with DEP loss. In addition to military pay there are other enlistment incentives designed to attract high quality personnel. These include enlistment bonuses and enhanced educational benefits (known as the Army College Fund). Since both increase the value of an enlistment, they can be expected to reduce the likelihood of DEP loss.

The Army is one of the largest training organizations in the world. Recruits fill a wide range of occupations in which the Army provides nearly all of the training. Army training enhances expected earnings. Those who obtain commitments for training in desirable military occupational specialties (MOS) are less likely to find better alternatives while in the DEP. Consequently, DEP loss is expected to be lower for those with more marketable MOS.

METHODOLOGY AND DATA

The Data

The data consist of observations on all individuals who signed enlistment contracts during FY86 and FY87. The FY86 and the FY87 contract cohorts are chosen because they are the most recent periods for which the final disposition -- either accession or DEP loss -- is known for all enlistees⁴. In all, there are 234,514 observations. This provides an unusual opportunity for detailed analysis of factors affecting DEP loss.

Regional unemployment rates and civilian wage rates are based on data from the Current Population Survey. Unemployment rates have been calculated for the regions covered by each recruiting battalion. Civilian wage rates are based on wage and salary earnings of 18 - 24 year olds in the region. Using these wages military/civilian wage ratios are calculated. This variable primarily represents civilian wage variation because military pay increased only once (January 1, 1987) during FY86 and FY87. Furthermore, because most individuals enlist at recruiting battalions near their homes,

⁴Final disposition is known for 99 percent of the observations.

battalion unemployment and earnings estimates reflect those experienced by the recruit⁶.

A variety of factors determines the desirability of a particular MOS. These include the amount of training and the transferability of the skills. While all MOS have some skills that are transferable to civilian markets, there is considerable variability that even depends on particular job assignments. Unfortunately skill transferability is not observable, however the number of training days for a particular MOS is available as a measure of MOS desirability⁶. MOS with long training periods are likely to provide more valuable skills than those with shorter training periods, making MOS with long training periods more desirable.

Table 1

Characteristics of Enlistment Cohorts for FY1986-87

| <u>Variable</u> | <u>Value</u> | <u>ALL</u> | <u>FY 1986</u> | <u>FY 1987</u> |
|----------------------------|--------------|------------|----------------|----------------|
| Age | Mean | 20.1 | 20.1 | 20.1 |
| DEP Length | Mean | 4.5 | 4.4 | 4.5 |
| AFQT | Mean | 58.7 | 59.0 | 58.3 |
| Black | % | 23.2 | 21.7 | 24.9 |
| Male | % | 85.2 | 85.3 | 85.1 |
| Dependent | % | 12.7 | 12.6 | 12.8 |
| Education Level | % | | | |
| H.S. Seniors | | 26.7 | 26.2 | 26.7 |
| H.S. Graduates | | 64.8 | 64.1 | 65.6 |
| Non-graduates | | 8.7 | 9.7 | 7.7 |
| MOS Training Days | Mean | 71.7 | 71.5 | 71.9 |
| Enlistment Term | % | | | |
| 2 Years | | 11.2 | 12.2 | 10.2 |
| 3 Years | | 51.6 | 56.5 | 46.3 |
| 4+ Years | | 37.2 | 31.3 | 43.5 |
| Army College Fund | % | 24.7 | 28.8 | 20.2 |
| BONUS Recipient | % | 12.7 | 17.4 | 7.6 |
| Unemployment Rate | Mean | 7.0 | 7.3 | 6.7 |
| Military/Civilian Earnings | Ratio | 96.9 | 97.5 | 96.6 |
| DEP loss | % | 8.5 | 8.2 | 8.9 |
| Observations | | 234,514 | 122,610 | 112,354 |

⁶We have used economic conditions at the time the enlistment contract was signed rather than conditions at time of accession or DEP loss based on preliminary analysis indicating the most explanatory power from this timing.

⁶The number of training days for each MOS is based on 1989 Qualifications files. For approximately 8% of the sample, we were unable to obtain training information. A separate analysis of this group did not indicate any significant differences in attrition rates. Thus it is unlikely that omitting these observations biases our results.

Table 1 presents a description of the characteristics of the individual contract cohorts by year. There is surprising similarity in the means of the characteristics of these cohorts over time. The average individual in this population is about 20 years old, signs an enlistment contract with delayed entry of 4.5 months, and scores 59 on the AFQT. Eighty-six percent of this population are males and twenty percent are blacks. Thirteen percent have dependents. Twenty-seven percent are high school seniors and sixty-five percent are high school graduates. Slight increases in the number of graduate and senior enlistments in 1987 resulted in a decline from 10% to 8% in the number of non-graduate contracts.

Despite similarity in the composition of the cohorts, there are significant differences in economic and policy variables between FY86 and FY87. The most noticeable economic factor was the 10% decrease in the unemployment rate for the FY87 cohort. In addition, there was a substantial decline in the fraction of the enlistment cohort receiving enlistment incentives which were available from fewer MOS. Between FY86 and FY87, eligibility for the Army College Fund fell by 30% and the number of recruits receiving enlistment bonuses fell by more than 40%. A policy shift to longer enlistment terms also occurred. While two-year enlistments held constant at 10%, the number of enlistment terms longer than three years rose by more than 33% while enlistment terms of three years had a corresponding fall. These changes reflect the effects of a shrinking recruiting budget and steady economic growth during the period.

Methodology

The Delayed Entry Program has been analyzed from a variety of perspectives. Early research of the DEP focused on its effect on enlistments. Using aggregate data to analyze enlistment contracts, Freeman (1980), Hanssens and Levien (1980) and Morey (1983) found that a large DEP increases enlistment contracts, and attributed this phenomenon to referrals. They found that recruits in the DEP often encouraged their peers to join the armed forces.

Nelson (1988), also using aggregate data, found that the unemployment rate had a significant, negative effect on the number of DEP losses per month while the size of the DEP managed by each recruiter and average DEP length significantly increased the number of DEP loss per month.

Phillips and Schmitz (1985), Nelson (1988), Celeste and Wilson (1985), and Quester and Murray (1986) investigated DEP loss using microdata. These research efforts attempted to identify individual characteristics influencing the probability that an individual becomes a DEP loss. Except for Celeste et al., the probability of DEP loss was estimated using logistic regression analysis.

Phillips and Schmitz estimated DEP loss using Army recruiting data from the first six months of FY82 and FY83. Unfortunately, their sample systematically excluded many seniors. A large proportion of the high school senior enlistment contracts are

signed the summer before the senior year with accession dates the summer after graduation. Since these contracts are signed during the third and fourth fiscal quarters they are excluded from the Phillips and Schmitz data. Their data also under-samples senior enlistment contracts of one or two months because these contracts could not be signed by high school seniors earlier than March, the last month of observation in Phillips and Schmitz's data base. As a result, senior enlistment contracts are systematically under-sampled, particularly those with longer term contracts which comprise most senior enlistments.

Nelson extended the Phillips and Schmitz model by using an expanded set of factors to control for demographic differences, labor market conditions, and enlistment incentives for FY1986-87. Nelson's results were similar to theirs but identified the strong negative effect of having dependents on the probability of DEP loss. However, Nelson's results were biased because he eliminated records from his data when the final status of the recruit was unknown. The effect of this, as with the previous work, was to systematically eliminate individuals with longer DEP lengths. In particular, long term senior enlistment contracts signed in the last two fiscal quarters were systematically eliminated since their disposition was unknown.

As an alternative approach, Celeste and Wilson estimated an event history model to analyze DEP loss. Event history analysis differs from the logistic regressions because it estimates a conditional probability: the probability that an individual will become a DEP loss at a particular point in time given that he or she has survived to that point. Event history analysis has many appealing features. Since job search and job matching are time dependent activities, event history analysis would appear to be a natural way of capturing the effects of explanatory variables that change over time, such as unemployment rates. In addition, this approach accommodates censored observations making the collection of entire enlistment cohorts less formidable.

In spite of these methodological advantages event history analysis is unsuitable for analyzing DEP loss. The reason is that the recruit's decision to leave the DEP is usually reported at some point after it is made. This is evident from the pattern of DEP loss. Nearly 90% of all DEP loss is reported in the last two months of the DEP, irrespective of DEP length. This is not surprising since both recruiters and recruits have incentives to delay reporting the DEP loss decision. An Army enlistment contract may serve as an insurance policy for the recruit who has accepted alternative employment. In the event that additional on-the-job experience should change the recruit's preferences, the Army enlistment is a fallback. An enlistment contract might also be a back up for a senior waiting on college acceptances and offers of student aid. In addition, the recruiter loses nothing by postponing the report of DEP loss since a change of heart on the part of the recruit is always possible. In either case the decision to leave the DEP is generally not reported at the time it occurs. This means that DEP loss cannot be localized in time, a necessary condition for event history analysis.

This difficulty is evident in evaluating treatment of open records. Many enlistment contracts signed in FY83, particularly those with long DEP lengths, were still open at the end of the fiscal year. Neither accession or DEP loss had been observed

because expected accession was not until FY84. These were treated by Celeste and Wilson as censored observations - they are not considered to be DEP losses since they have not yet been reported. Computing the probability of DEP loss conditional on it not being observed, however, distorts what actually takes place. In fact, the decision not to enter the Army may have already been made but not reported.

Quester and Murray avoid systematically censoring observations by following all enlistment contracts signed during two entire fiscal years (1983-84). Since this approach follows the disposition of all enlistment contracts, it is less likely to result in biased parameter estimates. However, because this research focuses only on Navy enlistments and is based on a small sample, it yields results that are not relevant for many recruiting policies of importance to the Army.

An additional shortcoming of these analyses is the absence of measures of local economic conditions. Although quarterly and regional dummies are used by Quester and Murray and regional dummies by Nelson, these are incomplete controls for variations in economic factors which may result in DEP loss.

Analytical Approach

The process of attrition from the Delayed Entry Program is summarized by a dichotomous dependent variable which categorizes individuals as accessions or DEP losses. The dependent variable is defined as:

$$Y_i = \begin{cases} 0, & \text{if individual } i \text{ enters the Army and} \\ 1, & \text{if individual } i \text{ is a DEP loss.} \end{cases}$$

The binary logistic regression model is an appropriate choice to estimate DEP loss for empirical analyses because the value of the dependent variable is restricted to the interval from zero to one. (See Fomby, Hill, and Johnson (1975).) This model relates the decision to leave the DEP for the i^{th} individual, Y_i , to a vector of characteristics associated with that individual, X_i . The term ϵ_i is random error representing unmeasured factors. The relationship can be expressed as:

$$Y_i = P(X_i) + \epsilon_i,$$

where

$$P(X_i) = P[Y_i = 1 | X_i] = 1/(1 + e^{-\beta X_i}),$$

$P(X_i)$ is the probability that the i^{th} individual will be a DEP loss and the β is the parameter vector to be estimated.

Despite the use of microdata, observation of individual tastes and preferences for Army service is not possible. Tastes play an important part in determining DEP loss and omitting them can lead to biased results, particularly if differences in tastes vary systematically. It is, however, possible to analyze the effects of demographic, economic, and policy variables on different subgroups of the enlistment cohort likely to have

similar tastes for military service and similar career information to reduce biases in estimated parameters. One subpopulation that is likely to have different behavior is high school seniors. Seniors are new entrants to the job market (but enlist earlier in the career search process) as opposed to high school graduates, and non-high school graduates. We have estimated separate equations for high school seniors and graduates, following Phillips and Schmitz (1985) and a separate equation for non-high school graduates.

Most hiring in the private sector involves some delays between when the hiring commitment is made and when the individual reports for work. What distinguishes the DEP from standard business practice is that the delayed entry can be as long as a year. It is likely that those individuals electing to delay entry for long periods are significantly different from those delaying entry for more conventional lengths of time. The willingness to wait for many periods in a job queue -- the DEP -- may indicate that an individual is enlisting for job training or educational benefits. Those individuals with short DEP lengths are more likely to be interested in jobs and immediate compensation. To capture these differences, we differentiate between those entering the DEP for less than four months (short DEP) and those entering the DEP for four months or more (long DEP). Separating the population in this manner contributes significantly to gains in explanatory power of the models. Since mean DEP length for the full sample was estimated as 4.46 months, four months roughly divides the population into groups with above average DEP length and below average DEP length. Those entering the DEP for less than four months comprise 54.8% of the population. Finally, we estimated a separate model for those not graduating from high school. Only one model is estimated for non-high school graduates because recruiting policies restrict the DEP length for this group. In all, these divisions resulted in separate analyses on five subgroups of the data.

Although the separation of the population into short DEP and long DEP is somewhat arbitrary, there are substantial differences between these subgroups. One likely function of the DEP is that it serves as a queue for those wanting the most desirable enlistment benefits. These include enlistment bonuses, educational benefits, and training. It is not surprising therefore that those in the long DEP are more likely to have the Army College Fund (ACF) option and to enlist in MOS with longer training times. Related to both of these factors, those in the long DEP have higher mean AFQT. By contrast, those in the short DEP are more likely to enlist for longer terms and to be from geographic regions with higher unemployment rates. In addition, a greater fraction of blacks enlist with a short length DEP while a larger proportion of women enlist with a longer DEP length. Unexpectedly, enlistment bonuses are distributed in nearly equal proportion across all the groups except for seniors with short DEP.

Table 2 presents the mean values of the explanatory variables for each group. Unlike the uniformity of the demographic data across fiscal years, Table 2 shows much wider variations in the explanatory variables between the subgroups. In comparing the characteristics of graduates and seniors, and long and short term DEP, several patterns are evident. High School Seniors constitute 35.2% of the sample. Not surprisingly, seniors are on average a year younger; they are much less likely to have dependents

Table 2

Characteristics of the Enrollment Cohorts for FY1986-87 by Educational Status and DEP Length

| Variable | Value | High School Seniors | | High School Graduates | | Non-H.S. Grade |
|---------------------|-------|---------------------|---------|-----------------------|--------|----------------|
| | | Short | Long | Short | Long | |
| Age | ALL | DEP | DEP | DEP | DEP | 19.69 |
| DEP Length | Mean | 19.00 | 17.89 | 21.08 | 20.90 | 3.12 |
| AFQT | Mean | 2.70 | 8.56 | 2.10 | 5.40 | 63.21 |
| Black | Mean | 53.40 | 59.62 | 54.53 | 64.95 | 11.15 |
| Male | % | 27.20 | 17.34 | 29.56 | 21.48 | 100.00 |
| Dependents | % | 94.40 | 91.45 | 86.14 | 68.60 | 17.04 |
| MOS Training Days | Mean | 9.10 | 2.31 | 17.23 | 17.70 | 62.65 |
| Enrollment Term | % | 68.40 | 71.70 | 69.85 | 79.67 | 0.00 |
| 2 Years | | 9.10 | 15.62 | 9.12 | 15.51 | 72.75 |
| 3 Years | | 58.20 | 44.03 | 55.77 | 42.30 | 27.25 |
| 4+ Years | | 32.70 | 40.35 | 35.11 | 42.19 | 0.00 |
| ACF Eligibility | % | 22.30 | 35.29 | 21.04 | 30.47 | 0.00 |
| BONUS Recipient | % | 15.70 | 13.52 | 14.96 | 12.08 | 6.84 |
| Unemployment Rate | Mean | 6.75 | 6.89 | 7.15 | 6.96 | 0.96 |
| MIL/Civ Earnings | Ratio | 0.97 | 9.74 | 0.97 | 0.96 | 31.96 |
| GED | % | 10.20 | 14.93 | 3.42 | 12.72 | 6.01 |
| DEP loss | % | 3.557 | 58.988 | 104.472 | 47.515 | 20.470 |
| No. of Observations | | | 234,514 | | | |

than graduates; and fewer women enlist in their senior year. There are other smaller differences between these groups. For instance, blacks comprise a smaller fraction of senior enlistees. Furthermore, seniors enlist in MOS with fewer training days, and a greater proportion of them enlist for the ACF.

EMPIRICAL RESULTS

Models were estimated for the full sample and the following subsamples:

H.S. Seniors with short expected DEP length
H.S. Seniors with long expected DEP length
H.S. Graduates with short expected DEP length
H.S. Graduates with long expected DEP length
Non-H.S. Graduates

The explanatory variables included in the models fall into three categories: variables representing personal characteristics, recruiting policies, and economic conditions. Personal characteristics include age, AFQT score, race, number of dependents, and gender. All of these variables are categorical except age and AFQT. In addition, a categorical indicator of high school graduation is included in the full sample model. A similar variable for general education diploma (GED) is included in the non-high school graduate subsample model. Policy variables in the model are two- and three-year enlistment tours, ACF with two-year enlistment tours, ACF with more than a two-year enlistment tour, enlistment bonuses, the number of training days for the recruit's MOS, and DEP length. Regional unemployment rates and relative earnings are the economic variables in the model. Finally, a dummy variable for FY87 is included to estimate effects on the probability of DEP loss of unobserved factors that changed between FY86 and FY87.

Estimates of the percentage change in the probability of DEP loss for a unit change in the covariants are shown in Table 3 for the six models. Estimates of the model parameters and their standard errors are included as Appendix A. The ** (*) indicates that the estimated parameters are statistically significant at the .01 (.05) level. All variables included in the full sample were significant at the .01 level except differences in DEP loss probability between years.

Personal characteristics have the largest effects upon DEP loss for all of the estimated models. Surprisingly, the characteristic with the largest effect is existence of dependents. Individuals with dependents can be expected to have DEP loss rates at least 10 percentage points lower than those with no family responsibilities. The effect of dependents on DEP loss is highest for those enlisting with long DEP lengths, especially

Table 3

Slopes of the DEP Loss Probability at the Mean (Percentage Changes)

| Variable | High School Seniors | | High School Graduates | | Non-H.S. GRADS |
|-----------------------|---------------------|----------|-----------------------|----------|----------------|
| | Short DEP | Long DEP | Short DEP | Long DEP | |
| Sample | 14,7534 | 12,6090 | 1,7200 | 3,2640 | 3,8460 |
| Age | -0.9290 | 2.1380 | 0.7360 | 2.8480 | 1.2100 |
| DEP Length | -0.0046 | -0.0660 | 0.0020 | -0.0250 | 0.0400 |
| AFQT | -4.3845 | -3.7390 | -0.8740 | -5.0930 | -1.7090 |
| Black | -22.9077 | -23.2740 | -3.9630 | -12.4110 | -11.9200 |
| Dependents | -0.0150 | -0.0030 | 0.0020 | -0.0120 | 0.0060 |
| MOS Training Days | -1.1131 | 0.1930 | 1.1450 | 2.8250 | N.A. |
| 2-Year TOE & no ACF | 3.3334 | -2.3980 | -0.3070 | -2.0270 | N.A. |
| ACF & no 2-Year TOE | -3.6382 | -2.4200 | -0.4080 | -0.1650 | N.A. |
| ACF & 2-Year TOE | -3.9103 | -0.7850 | -0.4530 | 0.1990 | -0.1160 |
| 3-Year TOE | -1.5015 | -2.2700 | -0.4950 | -1.4990 | N.A. |
| Bonus Participation | -1.3819 | -0.5360 | -0.2040 | -0.4050 | -0.2120 |
| Unemployment Rate | -8.5732 | -8.2440 | -1.6830 | -4.0050 | -1.0010 |
| M3/Civ Earnings Ratio | 10.6281 | -1.2070 | 0.8040 | -0.3660 | -0.3700 |
| FY87 | 7.7910 | 11.4530 | 2.4820 | 9.0600 | N.A. |
| Female | N.A. | N.A. | N.A. | N.A. | N.A. |
| High School Grad | N.A. | N.A. | N.A. | N.A. | N.A. |
| GED | N.A. | N.A. | N.A. | N.A. | -0.3480 |

Notes:

Method: Logistic Regression.

Sample: FY 1986-87 Non-prior service contracts.

Dependent Variable: DEP Loss.

* indicates significant at .01 level.

** indicates significant at .05 level.

N.A. indicates variable not included in model.

Probability of DEP loss = $P = 1/(1 + e^{-(\beta_0 + \beta_1 X_1)})$.Slope of Probability of DEP loss = $\delta P / \delta X_1 = P(1-P)\beta_1$.

high school seniors. Although the number of seniors with dependents is small, they represent the group most committed to honoring their enlistment contract. More significantly, better than 17% of the high school graduates signing enlistment contracts have dependents and are much better DEP loss risks than those without dependent responsibilities.

A surprising result for the full sample is that high school graduates have significantly lower DEP loss probabilities than high school seniors. Although this result is supported by Quester and Murray, it contradicts the results of Phillips and Schmitz and Celeste and Wilson. However, both Phillips and Schmitz and Celeste and Wilson systematically omitted observations of seniors from their sample, particularly those with longer DEP lengths. Therefore, their results may be the consequence of sample selection bias.

Consistent with previous work, gender has a large effect on DEP loss. Females have predicted DEP loss rates 6 percentage points higher than males. Women who are high school seniors have much higher DEP loss probabilities than those who are high school graduates. Women signing contracts with long DEP periods have higher probabilities of DEP loss than those signing short term contracts. Consequently the male/female DEP loss differentials rise from around 2 percentage points for short DEP graduates to more than 11 percentage points for long DEP seniors. Table 4 summarizes the reasons given for DEP loss by gender. The most frequent reason given for DEP loss for both men and women is apathy and failure to report to active duty. However this explanation of DEP loss is far more important for women. Of the 7.2 percentage point difference in DEP loss rates between men and women, the greater prevalence of this reason for DEP loss among women explains 4.2 percentage points. In addition, women are more likely to give medical reasons and pregnancy as reasons for DEP loss. This results in DEP loss rates being 2.2 percentage points higher for women than for men. In all, more than 89% of the differential DEP loss rate is explained by apathy and medical reasons.

Table 4

**Percentage Contribution of Reasons for DEP Loss by Gender
for FY1986-87 Enlistment Cohorts**

| <u>Reason for DEP Loss</u> | <u>GENDER</u> | |
|----------------------------|---------------|---------------|
| | <u>Male</u> | <u>Female</u> |
| Apathy & Failure to Report | 2.53% | 6.69% |
| Continuing Education | .34 | .52 |
| Dependency | .03 | .27 |
| Failure to Graduate H.S. | 1.20 | .56 |
| Medical | 1.36 | 2.83 |
| Pregnancy | n.a. | 1.74 |
| Moral | .77 | .38 |
| Other | 1.23 | 1.68 |
| DEP Loss Rate | 7.46 | 14.61 |

Notes: "n.a." indicates not applicable.

Age also has a large effect on DEP loss, particularly for seniors where each additional year of age increases the probability of DEP loss by more than 12 percentage points. For these new entrants to the career market, age is neither an indicator of labor market experience nor an indicator of preference for Army service. Rather it is most likely an indicator of potential high school success -- the least successful high school students taking the longest to become seniors and, consequently, are the oldest.

Although the effect of age on the probability of DEP loss is much smaller for graduates, it is still significant. Additional career information gained with age that reduces DEP loss is offset by the lower attachment of older recruits to Army service or perhaps the labor market in general.

Table 5 summarizes reasons for DEP loss for H.S. seniors and graduates. For seniors 4% of the observed 14.66% DEP loss rate is caused by failure to graduate from high school. This is nearly 30% of the DEP loss experienced by seniors and is the greatest single difference in the cause of DEP loss when compared to high school graduates.

Table 5

**Percentage Contribution of Reasons for DEP Loss by Educational Status
for FY1986-87 Enlistment Cohorts**

| <u>Reason for DEP Loss</u> | <u>High School</u> | | <u>Non-H.S. Graduates</u> |
|----------------------------|--------------------|----------------|-------------------------------|
| | <u>Graduates</u> | <u>Seniors</u> | |
| Apathy | 1.66% | 2.48% | .90 |
| Continuing Education | .19 | .91 | .05 |
| Dependency | .08 | .02 | .05 |
| Failure to Graduate H.S. | n.a. | 4.04 | .09 |
| Medical | 1.35 | 2.26 | 1.56 |
| Moral | .53 | .90 | 1.48 |
| Other | <u>2.55</u> | <u>4.50</u> | <u>1.94</u> |
| DEP Loss Rate | 6.33 | 14.66 | 6.07 |

Notes:

"n.a." indicates not applicable.

"H.S." indicates High School.

Race also has a significant effect on DEP loss for all categories. The probability of DEP loss for blacks is 2.7 percentage points lower than other groups.

Finally, higher AFQT scores decrease the likelihood of DEP loss, although the effect is small. A 10 percentile point difference in AFQT score results in a 0.1 percentage point reduction in the probability to DEP loss. Moreover, for the subsamples, the effect of AFQT score on DEP loss is significant only for those signing enlistment contracts with long DEP periods.

Except for DEP length, recruiting policy variables tend to have smaller effects on the probability of DEP loss than personal characteristics. Although not designed to reduce DEP loss, the Army College Fund, Enlistment Bonuses, and number of training days tend to reduce DEP loss slightly. Although both ACF and enlistment bonuses have similar effects for the full sample, reducing the probability of DEP loss by about 1.5 percentage points, their effects are concentrated among seniors with long enlistment terms. (Although ACF also has a strong effect on graduates with long DEP terms.) The effect of increased training days is also concentrated in a single subgroup - graduates. Every month of training beyond the mean of 60 days reduces the probability of DEP loss by .36 percentage points. The one recruiting incentive that results in a significant increase in DEP loss is the two year option. Note however, that when used in conjunction with ACF eligibility two-year enlistments tend to reduce the probability of DEP loss.

Unemployment rates and relative earnings are highly significant in all the estimated models. Both high unemployment and military pay both reduce the probability of DEP loss, as expected. Surprisingly, the effects are largest for seniors. One explanation of this difference is that seniors, as new entrants to the labor market, are more likely to misjudge opportunities. Consequently, in tight labor markets they quickly receive an offer that is preferred to Army enlistment. Graduates, with more information, are less likely to receive an offer preferred to enlistment since they have more accurate estimates of the distribution of career opportunities. The effects of relative wages on DEP loss is also large for seniors. A 10% increase in civilian wages increases the probability of DEP loss by .85 percentage points.

One difficulty with previous work has been an inconsistency of results. DEP length and sex were the only variables found by Phillips and Schmitz to be significant for all of their specifications. Significant results were obtained by Quester and Murray for sex, high school graduation status, age, and DEP length. Our results support these previous findings. In addition, we find significant effects in all subsamples for several factors where previous work had mixed results:

- blacks have lower probabilities of DEP loss
- ACF participation reduces the probability of DEP loss
- high AFQT score is negatively correlated with DEP loss
- two-year enlistment tours increase the probability of DEP loss

Many of the factors affecting DEP loss also appear to have similar effects on active duty attrition. Antel, Hosek, and Peterson (1987) found blacks and younger recruits to have lower probabilities of active duty attrition. Furthermore, the positive effects of age on active duty attrition are largest for those enlisting as seniors. Higher AFQT scores have negative, although insignificant, effects on the probability of active duty attrition. A particularly important result of Antel et al. is their finding that expectations of more education reduce the probability of active duty attrition (particularly for high school seniors). While it was not possible for us to measure educational expectations directly, enlistment with the Army College Fund option is an obvious indicator of educational intention. As reported above, ACF benefits

significantly reduce the probability of DEP loss. It is likely that expected additional education has similar effects for both forms of attrition. Interestingly, ACF benefits have their greatest effects in reducing DEP loss for seniors who enlist with a long DEP length, a group with particularly high probabilities of DEP loss.

Observed monthly DEP loss rates have accelerated since 1986. To determine whether this trend represents an unexplained shift in the probability of DEP loss, we included a categorical variable indicating the year in which the individual entered the DEP. Although there were significant increases in the probability of DEP loss from 1986 to 1987 for those with short DEP lengths this was offset by significant decreases in the probability of DEP loss for those with long DEP lengths. Consequently, for the overall sample, the effect of this variable was not significant.

The results for non-high school graduates are similar in many respects to those for the other subsamples, particularly high school graduates with short DEP length. There are, however, some differences. Because non-high school graduates are not eligible for enlistment incentives, the policy variables for these incentives are excluded from the model specification for this subsample. In addition, non-high school graduate women are not permitted to enlist so that the categorical gender variable is not in the model. For non-graduates, AFQT score and commitments to longer training have significant (but small) positive effects on probability of DEP loss. These results are the reverse of those found in the other subsamples. It is possible that non-graduates with the highest test scores are most successful in locating alternative career opportunities. The effects of economic conditions on the probability of DEP loss of non-graduates is small relative to all other groups. The regional unemployment rate has only a small, marginally significant, positive effect on the probability of DEP loss, and the effect of relative wages is not significant. It is possible that hiring restrictions imposed by civilian employers on non-high school graduates are not eased even when labor markets are tight. An additional categorical variable measuring the effects of GED (General Educational Diploma) was included in the model specification. We expected that those who returned to get their High School Equivalency Diploma to be less likely to drop out of the DEP. There are, however, no significant differences in the probability of DEP loss between those obtaining a GED and other non-high school graduates.

DISCUSSION

Although several factors that cause attrition also cause DEP loss, the most unexpected is age. Age has a large significant effect increasing both the probability of active duty attrition and the probability of DEP loss. Furthermore, the effect of age is greatest for high school seniors⁷. In both cases, this may reflect difficulties with schooling that lengthen the education process and result in failure to graduate or complete training.

⁷Increased age has its greatest effect on attrition during the first six months of active duty - the time period when training takes place.

One approach to reducing DEP loss that would also reduce active duty attrition is to carefully screen seniors who are older than their graduating class. Requiring evidence of adequate academic progress or permitting DEP later in the senior year for this group (also reducing DEP length) would reduce the cost of DEP loss and attrition with little additional cost. An alternative would be to provide academic counselling or study facilities to seniors that are in the DEP. While this would provide evidence that the Army is serious in its commitment to become partners with school systems in education, it is not costless and may not reduce training attrition.

Despite similarities in factors causing DEP loss and active duty attrition, there are differences. Most important are differences in the effects of economic variables. Both unemployment and relative earnings have strong effects on DEP loss. Yet, they have little effect on active duty attrition (See Antel et al., (1987), Appendix C). Therefore, it does not appear that DEP loss is simply an early manifestation of active duty attrition caused by the same factors. Factors leading to successful job search are more important for DEP loss than for active duty attrition.

At the end of 1987, The Army Recruiting Command became alarmed with increasing DEP loss rates. Our data show that DEP loss increased from 8.3% for the 1986 cohort to 8.9% for the 1987 cohort. Much of this increase in DEP loss stemmed from two sources: an improved economy and reduced recruiting resources. Between 1986 and 1987 unemployment fell 7.2% resulting in an estimated increase in DEP loss of .4 percentage points. Over the same period ACF options were reduced by 27.5% and enlistment bonuses were reduced by 56.4%. The estimated effect of these cuts is an increase of .15 percentage points in DEP loss. In all, more than 80% of the increase in DEP loss can be explained by the improved economy and reduced enlistment incentives.

If the effects of economic factors and recruiting incentives are ignored, it is likely that increasing rates of DEP loss could be incorrectly attributed to lax DEP management by recruiters. Since our results do not indicate fundamental changes in the factors causing DEP loss over the two years, deteriorating DEP management seems an unlikely contributor to the increased probability of DEP loss. In fact, drastic reallocation of recruiter time to increased attention on recruits in the DEP may reduce recruiter efficiency by reducing time spent by recruiters on new prospects. Further declines in the unemployment rate can be expected to accelerate DEP loss, complicating the difficulties of recruiting in tight labor markets.

Across all subsamples, women have greater probabilities of DEP loss than men. This is a particularly challenging result for the Army since it is committed to providing equal employment opportunities irrespective of gender. High female DEP loss rates make this a costly commitment⁸. Unfortunately, reasons given for DEP loss provide little insight into the underlying causes. Except the relatively modest male/female differentials explained by pregnancy, there are no *a priori* explanations for why other

⁸ Buddin (1988) also finds higher active duty attrition rates for women.

differences exist on the basis of gender. Additional analysis of differences in DEP loss by gender is necessary for the Army to formulate appropriate DEP policy.

Although recruits with dependents appear to be very low attrition risks, it is possible that separation from dependents normally required during training and the financial strains of supporting a family on low entry level pay may result in increased active duty attrition for this group. This could offset savings generated by lower DEP loss rates. Unfortunately there is little evidence in recent attrition studies to determine whether increased active duty costs are the result of recruits having dependents. Nevertheless, a policy of systematically recruiting from this group could greatly reduce the probability of DEP loss.

The length of DEP has the strongest relationship with DEP loss of any USAREC policy variable. Those who enlist for long DEP lengths have enough time to search out better career offers. It is understandable, therefore, that shorter DEP lengths might be proposed as a way of limiting DEP loss. However, reduced DEP length may not be justified. Those with longer DEP lengths have AFQT scores averaging a full 7 percentile points higher than AFQT scores of the other subsamples. For reduced DEP length to be cost effective, the cost of recruiting from these high quality prospects closer to accession date must be less than the cost of additional DEP loss incurred from longer DEP lengths. If the purpose of longer DEP length is to accommodate queues waiting for desirable jobs and job training, reduced DEP length would undoubtedly be justified. However, for those eligible for longer DEP lengths, the recruiting market is highly competitive. Their higher quality justifies additional recruiting costs, particularly in the form of ACF benefits. The fraction of recruits with the ACF option and long DEP length is half again as high as for those with short DEP lengths. In this highly competitive segment of the labor market the increased costs incurred from longer DEP lengths may be more than offset by the advantages of being able to make job offers when career decisions are being made. For some MOS, DEP may also be necessary to accumulate a sufficient number of interested and qualified applicants to conduct training. Reducing DEP length for these MOS may result in increasing recruiting costs or empty training seats.

For recruits with short DEP lengths, particularly high school graduates, enlistment appears to be primarily an economic decision. As indicated in Table 2, this subsample comes from areas with lower wages and higher unemployment rates. A smaller fraction of this group is likely to take ACF options. They enlist in MOS requiring less training. Furthermore, neither the number of training days nor ACF benefits have a significant effect on their probability of DEP loss. Kearl, Horne, and Gilroy (1989) found that economic factors (i.e. earnings and unemployment rates) have strong effects on enlistments. For these subsamples our results indicate that factors affecting enlistments are much more influential on the probability of DEP loss than the educational intention factors affecting active duty attrition.

While non-high school graduates have somewhat higher attrition rates than high school graduates, their rates of DEP loss are actually lower than those for high school seniors. Since current recruiting policies limit the DEP length for this group, it is not

possible to estimate DEP loss rates for long DEP lengths. By implication, they would not be expected to be substantially greater than for other groups. However, because of the very high rates of attrition experienced by non-graduates on active duty, increased DEP length for non-graduates may result in rapidly increasing DEP loss.

SUMMARY AND CONCLUSIONS

While extending previous efforts and correcting for a variety of their shortcomings, our analysis of DEP loss provides several additional findings. Identifying the importance of economic factors in causing of DEP loss has particular significance in explaining current trends toward increasing DEP loss. As the economy improves, DEP loss increases making recruiting doubly difficult since labor market conditions not only influence the enlistment decision but also the decision whether or not to leave the DEP.

Second, enlistment benefits (i.e., the Army College Fund, enlistment bonuses, and Army job training) not only increase enlistments but also reduce DEP loss. While the effects of these benefits are small, the large reductions have significant effects on DEP loss.

Third, we find a particularly strong relationship between age and DEP loss for seniors. If seniors are older than their classmates, they are far more likely to be DEP losses. This is primarily the result of failing to graduate. Two approaches to reduce DEP loss for this group include screening seniors who are likely to fail and providing remediation services to improve their chances of graduation.

In general, demographic factors (i.e., age, gender, race, dependent status and educational status) have the largest influence on DEP loss, particularly having dependents. Being younger, male, black, having dependents, and having a high school diploma reduces the likelihood a recruit will be a DEP loss.

While this research provides better estimates of the effects of various factors on DEP loss, it does not address the important benefit provided by the DEP to USAREC: lower recruiting cost. Formulating coherent and consistent DEP policies is complex because there are both costs and benefits associated with policy changes. This research also does not provide insights into the causes of differences in DEP loss due to gender. Additional research in these areas is warranted.

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APPENDIX

Table A1

DEP Less Logit Regression Results

| Variable | High School Seniors | | High School Graduates | | Non-H.S. Grads. |
|----------------------------------|------------------------|------------------------|-----------------------|-----------------------|------------------------|
| | Short DEP | Long DEP | Short DEP | Long DEP | |
| Intercept | -17.7209** (0.3314) | -13.5277** (1.0332) | -6.7730** (0.6194) | -6.8051** (0.5412) | -12.0843** (1.3304) |
| Age | 1.6485** (0.0284) | 0.9712** (0.0997) | 0.2206** (0.0505) | 0.2987** (0.0453) | 0.6934** (0.1178) |
| Age Squared | -0.0088** (0.0006) | -0.0178** (0.0024) | -0.0028** (0.0010) | -0.0046** (0.0009) | -0.0125** (0.0026) |
| DEP Length | 0.4884** (0.0111) | 0.1683** (0.0052) | 0.4195** (0.0240) | 0.2566** (0.0066) | 0.2142** (0.0109) |
| DEP Length Squared | -0.0190** (0.0000) | n.a. | n.a. | n.a. | n.a. |
| AFQT | -0.0018** (0.0005) | -0.0052** (0.0008) | 0.0005** (0.0011) | -0.0022** (0.0009) | 0.0071** (0.0026) |
| Black | -0.3471** (0.0211) | -0.2944** (0.0342) | -0.2646** (0.0417) | -0.4587** (0.0391) | -0.3026** (0.1006) |
| Dependents | -1.3204** (0.0392) | -1.8325** (0.1472) | -1.1998** (0.0655) | -1.1179** (0.0568) | -2.1102** (0.1636) |
| MOS Training Days | -0.0004** (0.0002) | -0.0016** (0.0013) | 0.0005** (0.0003) | -0.0011** (0.0002) | 0.0011** (0.0010) |
| 2-Year TOE & no ACF | 0.1677** (0.0583) | 0.1215** (0.3952) | 0.3468** (0.1377) | 0.2544** (0.0897) | n.a. |
| ACF & no 2-Year TOE | -0.1916** (0.0233) | 0.3639** (0.1682) | -0.0931** (0.0562) | -0.1826** (0.0435) | n.a. |
| ACF & 2-Year TOE | -0.1516** (0.0286) | -0.3994** (0.2439) | -0.1235** (0.0715) | -0.0149** (0.0498) | n.a. |
| 3-Year TOE | -0.0584** (0.0187) | -0.4269** (0.1333) | -0.0618** (0.0295) | 0.0179** (0.0347) | -0.0206** (0.0702) |
| Bonus Participation | -0.1980** (0.0280) | -0.1639** (0.2014) | -0.1498** (0.0599) | -0.1350** (0.0540) | n.a. |
| Unemployment Rate | -0.0473** (0.0043) | -0.1509** (0.0348) | -0.0617** (0.0093) | -0.0365** (0.0079) | -0.0376** (0.0173) |
| Military/Civilian Earnings Ratio | -0.5168** (0.0554) | -0.9305** (0.4420) | -0.6491** (0.1274) | -0.3608** (0.1018) | -0.1773** (0.2205) |
| FY87 | 0.0061** (0.0162) | 1.1603** (0.1348) | 0.2435** (0.0253) | -0.0330** (0.0305) | -0.0656** (0.0670) |
| Female | 0.8004** (0.0198) | 0.8506** (0.2190) | 0.7516** (0.0376) | 0.8161** (0.0306) | n.a. |
| High School Grad | -0.2267** (0.0229) | n.a. | n.a. | n.a. | n.a. |
| GED | n.a. | n.a. | n.a. | n.a. | -0.0619** (0.0668) |